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WPI Acc no: 1998-364764/199832 XRPX Acc No: N1998-284894

**Method of controlling degree of access to operating system resource for software program on computer - involves examining file associated with software program to determine degree of system-level access available to software program when software program is being executed by computer**

Patent Assignee: SUN MICROSYSTEMS INC (SUNM)

Inventor: BYRNE S B; NAGARATNAM N; BERN S B; NAGALEITNAM N

Patent Family ( 12 patents, 30 countries )

| Patent Number | Kind | Date     | Application Number | Kind | Date     | Update | Type |
|---------------|------|----------|--------------------|------|----------|--------|------|
| EP 853279     | A2   | 19980715 | EP 1997310659      | A    | 19971230 | 199832 | B    |
| JP 10254783   | A    | 19980925 | JP 199835321       | A    | 19980109 | 199849 | E    |
| CN 1194411    | A    | 19980930 | CN 1998100223      | A    | 19980109 | 199907 | E    |
| KR 1998070410 | A    | 19981026 | KR 1998332         | A    | 19980109 | 199953 | E    |
| TW 368635     | A    | 19990901 | TW 1998100158      | A    | 19980107 | 200034 | E    |
| US 6317742    | B1   | 20011113 | US 1997780823      | A    | 19970109 | 200173 | E    |
| SG 85092      | A1   | 20011219 | SG 19974729        | A    | 19971230 | 200214 | E    |
| EP 853279     | B1   | 20060920 | EP 1997310659      | A    | 19971230 | 200665 | E    |
| DE 69736697   | E    | 20061102 | DE 69736697        | A    | 19971230 | 200675 | E    |
|               |      |          | EP 1997310659      | A    | 19971230 |        |      |
| KR 551333     | B1   | 20060818 | KR 1998332         | A    | 19980109 | 200714 | E    |
| CN 1313951    | C    | 20070502 | CN 1998100223      | A    | 19980109 | 200758 | E    |
| DE 69736697   | T2   | 20070913 | DE 69736697        | A    | 19971230 | 200761 | E    |
|               |      |          | EP 1997310659      | A    | 19971230 |        |      |

Priority Applications (no., kind, date): US 1997780823 A 19970109; EP 1997310659 A 19971230

## Patent Details

| Patent Number       | Kind  | Lan | Pgs | Draw | Filing Notes |
|---------------------|---|-----|-----|------|--------------|
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|-------------------------------------|-------------|----|----|--|--------------------------|---------------|
| States,Original                     |             |    |    |  |                          |               |
| JP 10254783                         | A           | JA | 63 |  |                          |               |
| TW 368635                           | A           | ZH |    |  |                          |               |
| SG 85092                            | A1          | EN |    |  |                          |               |
| EP 853279                           | B1          | EN |    |  |                          |               |
| Regional Designated States,Original | DE FR GB NL |    |    |  |                          |               |
| DE 69736697                         | E           | DE |    |  | Application              | EP 1997310659 |
|                                     |             |    |    |  | Based on OPI patent      | EP 853279     |
| KR 551333                           | B1          | KO |    |  | Previously issued patent | KR 9870410    |
| DE 69736697                         | T2          | DE |    |  | Application              | EP 1997310659 |
|                                     |             |    |    |  | Based on OPI patent      | EP 853279     |

### Alerting Abstract EP A2

The method involves defining a degree of access to the operating system resources for the software program. A file associated with the software program is examined to determine the degree of system-level access available to the software program when the software program is being executed by the computer. The software program is executed on the computer and a program instruction associated is intercepted with the software program when the software program is being executed on the computer. If the program instruction includes an operation that is outside the degree of system-level access available to the software program is determined. The program instruction is executed when it is determined that the software program has permission to access system-level resources associated with the computer that are within the degree of system-level access available to the software program.

**Title Terms** /Index Terms/Additional Words: METHOD; CONTROL; DEGREE; ACCESS; OPERATE; SYSTEM; RESOURCE; SOFTWARE; PROGRAM; COMPUTER; FILE; ASSOCIATE; DETERMINE; LEVEL; AVAILABLE; EXECUTE

### Class Codes

| International Patent Classification |             |       |          |        |              |  |
|-------------------------------------|-------------|-------|----------|--------|--------------|--|
| IPC                                 | Class Level | Scope | Position | Status | Version Date |  |
| G06F-015/16; G06F-009/06            |             |       | Main     |        | "Version 7"  |  |
| G06F-0012/14                        | A           | I     | F        | R      | 20060101     |  |
| G06F-0013/00                        | A           | I     |          | R      | 20060101     |  |
| G06F-0013/00                        | A           | I     | L        |        | 20060101     |  |

|               |   |   |   |   |          |  |  |
|---------------|---|---|---|---|----------|--|--|
| G06F-0015/16  | A | I | F | B | 20060101 |  |  |
| G06F-0017/00  | A | I |   | R | 20060101 |  |  |
| G06F-0017/00  | A | I | F |   | 20060101 |  |  |
| G06F-0021/22  | A | I | L | R | 20060101 |  |  |
| G06F-0021/24  | A | I | L | R | 20060101 |  |  |
| G06F-0009/445 | A | I | L | R | 20060101 |  |  |
| G06F-0009/46  | A | I |   | R | 20060101 |  |  |
| G06F-0009/46  | A | I | F |   | 20060101 |  |  |
| G06F-0009/46  | A | I | F | B | 20060101 |  |  |
| G06F-0012/14  | C | I | F | R | 20060101 |  |  |
| G06F-0013/00  | C | I |   | R | 20060101 |  |  |
| G06F-0013/00  | C | I |   |   | 20060101 |  |  |
| G06F-0015/16  | C | I | F | B | 20060101 |  |  |
| G06F-0017/00  | C | I |   | R | 20060101 |  |  |
| G06F-0017/00  | C | I |   |   | 20060101 |  |  |
| G06F-0021/00  | C | I | L | R | 20060101 |  |  |
| G06F-0021/22  | C | I | L | R | 20060101 |  |  |
| G06F-0009/445 | C | I | L | R | 20060101 |  |  |
| G06F-0009/46  | C | I |   | R | 20060101 |  |  |
| G06F-0009/46  | C | I |   | B | 20060101 |  |  |

US Classification, Issued: 707010000, 713200000, 707009000

File Segment: EPI;

DWPI Class: T01

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### China

**Publication No.** CN 1194411 A (Update 199907 E)

**Publication Date:** 19980930

**Assignee:** SUN MICROSYSTEMS INC; US (SUNM)

**Language:** ZH

**Application:** CN 1998100223 A 19980109 (Local application)

**Priority:** US 1997780823 A 19970109

Original IPC: G06F-17/00(A) G06F-13/00(B)  
Current IPC: G06F-13/00(R,A,I,M,EP,20060101,20051206,A) G06F-13/00(R,I,M,EP,20060101,20051206,C) G06F-17/00(R,I,M,EP,20060101,20051206,A) G06F-17/00(R,I,M,EP,20060101,20051206,C)

**Publication No.** CN 1313951 C (Update 200758 E)  
**Publication Date:** 20070502  
**Assignee:** SUN MICROSYSTEMS INC; US (SUNM)  
**Inventor:** NAGALEITNAM N  
BERN S B

**Language:** ZH  
**Application:** CN 1998100223 A 19980109 (Local application)  
**Priority:** US 1997780823 A 19970109  
**Original IPC:** G06F-13/00(I,CN,20060101,A,L) G06F-13/00(I,M,98,20060101,C) G06F-17/00(I,CN,20060101,A,F) G06F-17/00(I,M,98,20060101,C)  
**Current IPC:** G06F-13/00(A,I,CN,20060101,A,L) G06F-13/00(I,M,98,20060101,C) G06F-17/00(I,CN,20060101,A,F) G06F-17/00(I,M,98,20060101,C)

## Germany

**Publication No.** DE 69736697 E (Update 200675 E)  
**Publication Date:** 20061102  
**Language:** DE  
**Application:** DE 69736697 A 19971230 (Local application)  
EP 1997310659 A 19971230 (Application)  
**Priority:** US 1997780823 A 19970109  
**Related Publication:** EP 853279 A (Based on OPI patent )  
**Original IPC:** G06F-9/46(I,DE,20060101,A,F)  
**Current IPC:** G06F-9/46(I,DE,20060101,A,F)

**Publication No.** DE 69736697 T2 (Update 200761 E)  
**Publication Date:** 20070913  
**Language:** DE  
**Application:** DE 69736697 A 19971230 (Local application)  
EP 1997310659 A 19971230 (Application)  
**Priority:** US 1997780823 A 19970109  
**Related Publication:** EP 853279 A (Based on OPI patent )  
**Original IPC:** G06F-9/46(B,I,H,EP,20060101,20051017,A,F) G06F-9/46(B,I,M,98,20060101,20051017,C)  
**Current IPC:** G06F-9/46(B,I,H,EP,20060101,20051017,A,F) G06F-9/46(B,I,M,98,20060101,20051017,C)

## EPO

**Publication No.** EP 853279 A2 (Update 199832 B)  
**Publication Date:** 19980715

**Verfahren und Geraet zur Steuerung von Zugriff auf Systembetriebsmittel**  
**Method and apparatus for controlling software access to system resources**  
**Procede et appareil pour commander l'accès par le logiciel a des ressources d'un**  
**système informatique**

Assignee: Sun Microsystems Inc., 901 San Antonio Road, Palo Alto, California 94303-4900, US (SUNM)

Inventor: Nagaratnam, Nataraj, 620 Euclid Avenue, Apt 1, Syracuse, New York 13210, US

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Agent: Browne, Robin Forsythe, Dr., Urquhart-Dykes & Lord Tower House Merrion Way, Leeds LS2 8PA West Yorkshire, GB

Language: EN (21 pages, 8 drawings)

Application: EP 1997310659 A 19971230 (Local application)

Priority: US 1997780823 A 19970109

Designated States: (Regional Original) AL AT BE CH DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI

Original IPC: G06F-9/46(A)

Current IPC: G06F-9/46(R,A,I,M,EP,20060101,20051008,A) G06F-9/46(R,I,M,EP,20060101,20051008,C)

Original Abstract:

Methods, systems, and software for installing and operating selected software applications on a client computer that is in communication with a server computer on a computer network are described. In one aspect of the present invention, a method for controlling the degree of access to operating system resources for a software program running on a computer that is running said operating system is provided. The degree of access to the operating system resources is defined for the software program, and at least one file including instructions for executing the software program is loaded on the computer from the server computer. The file is examined to determine the degree of system-level access available to the software program when the software program is being executed by the computer. The software program is executed, and a program instruction associated with the software program is intercepted when the software is being executed on the computer. A determination is then made to determine if the program instruction includes an operation that is outside of a degree of system-level access that is available to the software program, and if it is determined that the software program has permission to access system-level resources associated with the computer that are within the degree of system-level access available to the software, the program instruction is executed.

Claim:

- 1. A method for controlling the degree of access to operating system resources for a software program running on a computer which computer is running said operating system, the method comprising the steps of:
  - (a) defining said degree of access to said operating system resources for said software program;

(b) examining at least one file associated with said software program to determine the degree of system-level access available to said software program when said software program is being executed by said computer;

(c) executing said software program on said computer;

(d) intercepting a program instruction associated with said software program when said software program is being executed on said computer;

(e) determining if said program instruction includes an operation that is outside said degree of system-level access available to said software program; and

(f) executing said program instruction when it is determined that said software program has permission to access system-level resources associated with said computer that are within the degree of system-level access available to said software program.

**Publication No.** EP 853279 B1 (Update 200665 E)

Publication Date: 20060920

**Verfahren und Gerat zur Steuerung von Zugriff auf Systembetriebsmittel**

**Method and apparatus for controlling software access to system resources**

**Procede et appareil pour commander l'accès par le logiciel a des ressources d'un systeme informatique**

Assignee: SUN MICROSYSTEMS, INC., 901 San Antonio Road, Palo Alto, California 94303-4900, US

Inventor: Nagaratnam, Nataraj, 620 Euclid Avenue, Apt 1, Syracuse, New York 13210, US

Byrne, Steven B., 5269 Carter Avenue, San Jose, California 95118, US

Agent: Browne, Robin Forsythe, Urquhart-Dykes & Lord LLP, Tower North Central, Merrion Way, Leeds LS2 8PA, GB

Language: EN

Application: EP 1997310659 A 19971230 (Local application)

Designated States: (Regional Original) DE FR GB NL

Original IPC: G06F-9/46(B,I,H,EP,20060101,19980525,A,F)

Current IPC: G06F-9/46(B,I,H,EP,20060101,19980525,A,F)

Claim:

1. Verfahren (400) zum Steuern des Grads des Zugreifens zu Betriebssystemressourcen für ein Softwareprogramm, das auf einem ersten Computer läuft, wobei der erste Computer das Betriebssystem ausführt, wobei das Verfahren Folgendes aufweist:
  - o Prüfen (710) mindestens einer Datei (360), die zu dem Softwareprogramm gehört, um den Grad des Zugreifens zu Betriebssystemressourcen, der für

das Softwareprogramm verfügbar ist, wenn das Softwareprogramm von dem ersten Computer ausgeführt wird, zu bestimmen, wobei zumindest eine Datei (360) den Grad der Zugriffsprivilegien (364) zu Betriebssystemressourcen, der für das Softwareprogramm verfügbar ist, wenn das Softwareprogramm auf dem ersten Computer ausgeführt wird, definiert,

- Ausführen (604) des Softwareprogramms auf dem ersten Computer;
- Abfangen (606) einer Programmanweisung, die zu dem Softwareprogramm gehört, während das Softwareprogramm auf dem ersten Computer ausgeführt wird,
- Bestimmen (612), ob die Programmanweisung eine Operation aufweist, die ausserhalb des Grads des Zugriffs auf Betriebssystemressourcen, der für das Softwareprogramm verfügbar sind, liegt, und
- Ausführen (608) der Programmanweisung durch den ersten Computer, wenn bestimmt wird, dass das Softwareprogramm die Erlaubnis hat, auf die Betriebssystemressourcen, die zu der Programmanweisung gehören, innerhalb des Grads an Zugriffsprivilegien, die für das Softwareprogramm verfügbar sind, wenn es auf dem ersten Computer läuft, zuzugreifen.

1. A method (400) for controlling the degree of access to operating system resources for a software program running on a first computer, wherein said first computer is running said operating system, the method comprising:

- examining (710) at least one file (360) associated with said software program to determine the degree of access to operating system resources available to said software program when said software program is being executed by said first computer, wherein the at least one file (360) defines the degree of access privileges (364) to operating system resources available to said software program when said software program is being executed by said first computer;
- executing (604) said software program on said first computer;
- intercepting (606) a program instruction associated with said software program while said software program is being executed on said first computer;
- determining (612) if said program instruction includes an operation that is outside said degree of access to operating system resources available to said software program; and
- executing (608) said program instruction by said first computer when it is determined that said software program has permission to access the operating system resources associated with said program instruction within said degree of access privileges available to said software program when running on said first computer.

1. Procédé (400) pour contrôler le degré d'accès aux ressources d'un système d'exploitation pour un programme logiciel exécuté sur un premier ordinateur, dans lequel ledit premier ordinateur exécute ledit système d'exploitation, le procédé comprenant les étapes consistant à:
  - examiner (710) au moins un fichier (360) associé au dit programme logiciel pour déterminer le degré d'accès aux ressources de système d'exploitation disponibles pour ledit programme logiciel lorsque ledit programme logiciel est exécuté par ledit premier ordinateur, dans lequel le au moins un fichier (360) définit le degré de privilèges d'accès (364) aux ressources de système d'exploitation disponibles pour ledit programme logiciel lorsque ledit programme logiciel est exécuté par ledit premier ordinateur;
  - exécuter (604) ledit programme logiciel sur ledit premier ordinateur;
  - intercepter (606) une instruction de programme associée au dit programme logiciel pendant que ledit programme logiciel est exécuté sur ledit premier ordinateur;
  - déterminer (612) si ladite instruction de programme comprend une opération qui est à l'extérieur dudit degré d'accès aux ressources de système d'exploitation disponibles pour ledit programme logiciel; et
  - exécuter (608) ladite instruction de programme par ledit premier ordinateur lorsqu'il est déterminé que ledit programme logiciel a la permission d'accéder aux ressources de système d'exploitation associées à ladite instruction de programme à l'intérieur dudit degré de privilèges d'accès disponibles pour ledit programme logiciel lorsqu'il est exécuté sur ledit premier ordinateur.

## Japan

**Publication No.** JP 10254783 A (Update 199849 E)

**Publication Date:** 19980925

### **METHOD AND DEVICE FOR CONTROLLING ACCESS OF SOFTWARE TO SYSTEM RESOURCE**

**Assignee:** SUN MICROSYST INC (SUNM)

**Inventor:** NAGARATNAM NATARAJ

BYRNE STEVEN B

**Language:** JA (63 pages)

**Application:** JP 199835321 A 19980109 (Local application)

**Priority:** US 1997780823 A 19970109

**Original IPC:** G06F-12/14(A) G06F-9/445(B)

**Current IPC:** G06F-12/14(R,A,I,M,JP,20060101,20060310,A,F) G06F-12/14(R,I,M,JP,20060101,20060310,C,F) G06F-



21/00(R,I,M,JP,20060101,20060310,C,L) G06F-  
21/22(R,I,M,JP,20060101,20060310,A,L) G06F-  
21/22(R,I,M,JP,20060101,20060310,C,L) G06F-  
21/24(R,I,M,JP,20060101,20060310,A,L) G06F-  
9/445(R,I,M,JP,20060101,20060310,A,L) G06F-  
9/445(R,I,M,JP,20060101,20060310,C,L) G06F-9/46(R,I,M,EP,20060101,20051008,A)  
G06F-9/46(R,I,M,EP,20060101,20051008,C)

## **Korea**

**Publication No.** KR 551333 B1 (Update 200714 E)  
Publication Date: 20060818  
Assignee: SUN MICROSYSTEMS INC (SUNM)  
Inventor: NAGARATNAM N  
BYRNE S B  
Language: KO  
Application: KR 1998332 A 19980109 (Local application)  
Priority: US 1997780823 A 19970109  
Related Publication: KR 9870410 A (Previously issued patent)  
Original IPC: G06F-15/16(B,I,H,KR,20060101,19980221,A,F) G06F-  
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Current IPC: G06F-15/16(B,I,H,KR,20060101,19980221,A,F) G06F-  
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**Publication No.** KR 1998070410 A (Update 199953 E)  
Publication Date: 19981026  
Assignee: SUN MICROSYSTEMS INC (SUNM)  
Language: KO  
Application: KR 1998332 A 19980109 (Local application)  
Priority: US 1997780823 A 19970109  
Original IPC: G06F-15/16(A)  
Current IPC: G06F-15/16(A)

## **Singapore**

**Publication No.** SG 85092 A1 (Update 200214 E)  
Publication Date: 20011219  
Assignee: SUN MICROSYSTEMS INC (SUNM)  
Inventor: NAGARATNAM N  
BYRNE S B  
Language: EN  
Application: SG 19974729 A 19971230 (Local application)  
Priority: US 1997780823 A 19970109  
Original IPC: G06F-9/46(A) G06F-9/06(B) G06F-9/445(B) G06F-12/14(B) G06F-  
13/00(B) G06F-15/16(B) G06F-17/00(B)

Current IPC: G06F-9/46(R,A,I,M,EP,20060101,20051008,A) G06F-9/46(R,I,M,EP,20060101,20051008,C)

## **Taiwan**

**Publication No.** TW 368635 A (Update 200034 E)  
**Publication Date:** 19990901  
**Assignee:** SUN MICROSYSTEMS INC; US (SUNM)  
**Language:** ZH  
**Application:** TW 1998100158 A 19980107 (Local application)  
**Priority:** US 1997780823 A 19970109  
**Original IPC:** G06F-9/06(A)  
**Current IPC:** G06F-9/06(A)

## **United States**

**Publication No.** US 6317742 B1 (Update 200173 E)  
**Publication Date:** 20011113  
**Method and apparatus for controlling software access to system resources.**  
**Assignee:** Sun Microsystems, Inc., Palo Alto, CA, US  
**Inventor:** Nagaratnam, Nataraj, Syracuse, NY, US  
Byrne, Steven B., San Jose, CA, US  
**Agent:** Beyer Weaver & Thomas  
**Language:** EN  
**Application:** US 1997780823 A 19970109 (Local application)  
**Original IPC:** G06F-17/30(A)  
**Current IPC:** G06F-9/46(R,A,I,M,EP,20060101,20051008,A) G06F-9/46(R,I,M,EP,20060101,20051008,C)  
**Original US Class (secondary):** 70710 713200 7079

**Original Abstract:** Methods, systems, and software for installing and operating selected software applications on a client computer that is in communication with a server computer on a computer network are described. In one aspect of the present invention, a method for controlling the degree of access to operating system resources for a software program running on a computer that is running said operating system is provided. The degree of access to the operating system resources is defined for the software program, and at least one file including instructions for executing the software program is loaded on the computer from the server computer. The file is examined to determine the degree of system-level access available to the software program when the software program is being executed by the computer. The software program is executed, and a program instruction associated with the software program is intercepted when the software is being executed on the computer. A determination is then made to determine if the program instruction includes an operation that is outside of a degree of system-level access that is available to the software program, and if it is determined that the software program has permission to access system-level resources associated with the computer that are within the degree of system-level access available to the software, the program

instruction is executed.

Claim:

1. A method for controlling the degree of access to operating system resources for a software program running on a first computer, wherein said first computer is running said operating system, the method comprising:
  - examining at least one file associated with said software program to determine the degree of system-level access available to said software program when said software program is being executed by said first computer, wherein the software program is constructed using said at least one file;
  - executing said software program on said first computer;
  - intercepting a program instruction associated with said software program while said software program is being executed on said first computer;
  - determining when said program instruction includes an operation that is outside said degree of system-level access available to said software program; and
  - executing said program instruction when it is determined that said software program has permission to access system-level resources that are within said degree of system-level access available to said software program.